

Coffee Ground: The Economic and Perfect Wound Dressing

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ABSTRACT

The coffee ground has inherent an antioxidant, anti-inflammatory, and antimicrobial, creating the best dressing for acute and chronic wounds. It may find a cost-effective, simple procedure, and different from the wound dressing known today. Coffee powder for damages has the understanding to save the growth of the wound cells. We remained a thin coffee layer for keeping the wound bed cells safe and faster healing process. Protecting the wound bed cells promotes economic dressing and perfect healing.

Key words: coffee powder, low-cost dressing, wound cell protection

INTRODUCTION

Coffee powder (caffeinated coffee) is a topical wound cover that can accelerate the growth of new cells in therapeutic performance. It was more than one hundred years old traditional wound treatment using homemade coffee by coffee plantation residents. Since 2003, we have experienced more than 15 years of clinical investigations in using coffee to treat wounds, showing its elegance as a wound dressing.¹ The coffee has a high ability as an anti-bacterial, antioxidant, and anti-inflammatory, improving skin micro-circulation, accompanied by a pleasant coffee aroma.^{1,2} Coffee powder can manage all wound stages and shorten the incidence of inflammation, collagen proliferation, and epithelialization for faster healing.¹ As a favorite drink, coffee is easy to obtain and available everywhere.¹

DRESSING REPLACEMENT

Frequent dressing (every 1-3 days) may cause trauma to the wound bed, especially by gauze attached to the wound surface.² The adhesion causes the wound surface cells to affix to the dressing and pull out from the wound surface during replacement, creating a healing delay.²

With coffee grounds, the wound-bed cells will not stick to the dressing for a thin layer of coffee deliberately left on the wound surface during and after replacement. When replacing the wound

cover (changing the old coffee with the new one), the wound should not be visible because covered with a thin layer of coffee.

Using gauzes, hydrocolloid pads, and negative pressure as wound dressing treatment will cause trauma. The level of the MMP enzyme, as a pro-inflammatory agent, rises in chronic wounds.³ A study of wounds infected by *Staphylococcus aureus* ATCC 25923 in mice, coffee grounds compared with hydrocolloid pads, and gauzes (control group). It showed the fastest healing in the coffee group and lowered MMP-1 levels.³ It stated that the coffee group was more efficient at treating acute injuries in mice than gauzes or hydrocolloid pads.³

THE COFFEE PRESERVES THE WOUND-GROWING CELLS

During replacement, superficial cells will not stick to the thin layer of coffee powder deliberately left behind in a wound. Repeated washing using saline or other sterile liquids resulted in cell loss, increased wound tissue pH and bacterial contamination.^{4,5} Hair follicle bacteria come along with fluid entering the wound by the action of washing.⁶ The coffee powder prevents trauma to the cells during replacement. The picture shows the loss of epithelial cells due to adhering to the wound dressing, no matter what pads are used, except using coffee powder.^{7,8} The more frequent the replacement more injuries will be.

The ideal topical wound dressing must have vital abilities, especially antibacterial, anti-inflammatory, antioxidant, pleasant odor, economically beneficial (inexpensive), and simple procedures.¹ Coffee grounds have all these capabilities, so coffee is enjoyable to use in wound care. Thus, the wound can heal using coffee with simple and no adverse complications in our case series. Coffee has proven to be a suitable wound dressing and accelerates wound healing.^{7,8,9} Coffee can prevent trauma to the wound surface because the coffee layer takes care of healthy new growth cells.^{8,9} Thus, maintaining cells that grow on the wound surface is essential for healing.

Moist condition in the wound occurs naturally from extra cells, capillaries, and interstitial fluid. The wound fluid spontaneously maintains the tissue moisture. Each injury will produce physiological fluid from the inner tissue as a natural consequence of soft tissue damage. Coffee keeps moist, according to its nature, which absorbs the liquid and dissolves in it. A thin layer of coffee covers the moist wound bed lesion and protects cells actively dividing and proliferating to close the wound. The moisture circumstances are best for the wound healing process.



Figure 1. The picture shows a 60-year-lady with a diabetic wound at the lateral malleolus of the right foot managed using a coffee ground. The procedure was always dry (without any liquid poured on it). The cure has taken at the end of the second week with the blood glucose being less than 200mg%. It is secondary healing with an acceptable scar

ECONOMIC VIEW

There is a tendency for wound care to use a high-cost tool. The cost of wound healing in the patient shown in Figure 1 was low. The procedure was only two times coffee replacement. The cost of coffee powder was $2 \times \text{Rp}20.000 = \text{Rp}40.000$ (forty-thousands Rupiah). For gauzes and adhesive tape, $2 \times \text{Rp}15.000 = \text{Rp}30.000$ (thirty-thousands Rupiah), in total $\text{Rp}70.000$ (seventy-thousands Rupiah) per 2 weeks. For two weeks, it is only about US\$5. The coffee ground is cost-effective and a user-friendly wound dressing.

Compared to hydrocolloid wound dressing (DuoDERM®) costs $\text{Rp}77500,-$ or US\$5.13 for a piece of $10\text{cm} \times 10\text{cm}$ ($1\text{US\$} = \text{Rp}15,112.10$). When the wound dressing is replaced daily for two weeks, it equals US\$71.82.

A unit of Negative Pressure Wound Treatment (NPWT) device costs more than US\$3000. The disposable NPWT unit costs US\$1500. The cost of a wound using Vacuum-assisted closure was more than US\$ 1558 for about 23.5 cm^2 . In practice, the use of NPWT for wounds requires an anesthetic drug.¹⁰

They are still far more costly than using coffee ground! Hence, coffee ground can help the problem. The wounded person can help himself by putting the coffee on the wound before meeting the health provider to prevent infection. Coffee has been famous for a long time in many villages in Indonesia without any complications reported. It is a pearl of local wisdom. Use has been widespread in Indonesia until now, and the public trust the result. Why? Because of its efficiency and simplicity. The procedure is natural, without washing or rubbing to clean the wound. Sometimes the dirty wound is washed. Later, the wound healed without being infected. The performance in the wound treatment helps the wound-bed cells happy to reproduce freely, resulting in faster healing.

With a healing wound cover, simple to use, and exceptionally inexpensive, it is an attractive choice, especially in remote areas far from hospitals and health providers.

Today, the health practice in developing countries has faced financial difficulties in wound treatment.¹¹ With this innovation shall less burden the national economy, even the rich countries to handle the cost of the treatment of chronic ulcers by diabetes mellitus, obesity, pressure ulcers.¹¹

The Figure below a clear differentiation between the dressing cover and the time of dressing changes.

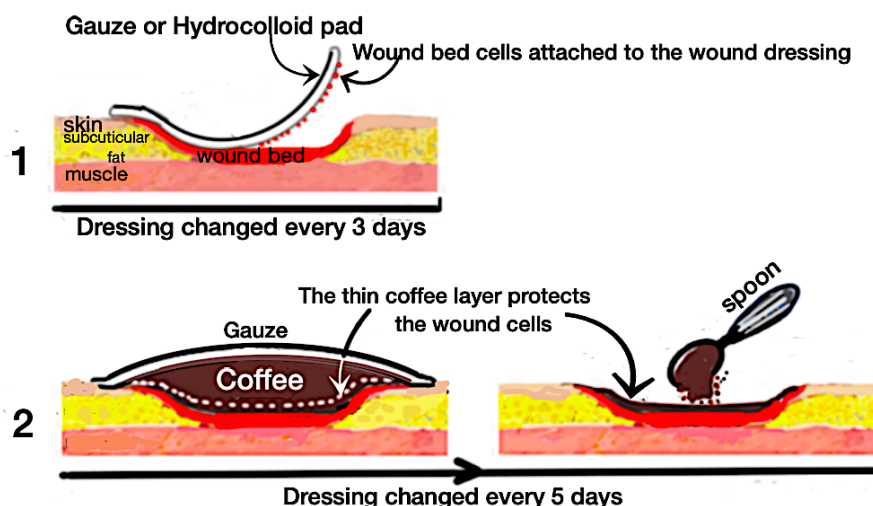


Figure 2.

- 1) Dressing change applies every 1-3 days, and the wound-base cells are attached to the dressing (gauze or hydrocolloid pad). ²**
- 2) The topical dressing using coffee powder changes every seven days. The thin coffee layer, close to the wound bed, protects the wound cells until complete healing. A spoon needs to put the powder on the wound**

CONCLUSION

Those described procedures are called the new paradigm of wound management. Coffee grounds do not cause trauma compared to other wound covers, and by its nature, the use of coffee powder accelerates wound healing and is more economical. Hence, the coffee powder for wound dressing is more acceptably perfect in practice.

References

1. Yuwono HS. The New Paradigm of Wound Management Using Coffee Powder. *J Surg.* 2014; 2, (2):25-9
2. Hendro Sudjono Yuwono, Boby Eko Nugroho. Coffee prevents damaged of wound bed cells. *Hos Pal Med Int Journal.* 2022;5(1):8-11
3. Vicente SJV, Queiroz YS, Gotlieb SLD, da Silva Torres EAF. Stability of Phenolic MMP-1 Responses and Epithelialization of Acute Staphylococcus aureus Infected Wounds Compounds and Antioxidant Capacity of Regular and Decaffeinated Coffees. 2014. *Braz Arch Biol Technol*, 57(1): 110-18
4. Winata AA, Yuwono HS, Hapsari P. Correlation between MMP-1 Responses and Epithelialization of acute Staphylococcus aureus Infected Wounds Treated by Coffee powder, Saline gauze, and Hydrocolloid. *Intern J Gen Med Pharmacy* 2017;6(5): 31-8
5. Moon CH, Crabtree TG. New Wound Dressing Techniques to Accelerate Healing. *Curr Treat Options Infect Dis* 2003; 5: 251-60
6. Arimbi D, Yuwono HS. pH of Wound Fluids Treated Using Coffee Powder and Bacitracin-Neomycin Powder. *J Surg* 2016;4,(1) : 9-116.
7. Yuwono HS. The New Paradigm of Wound Management: A Must to Follow. *Hos Pal Med Int J* 2017; 4: 1-37.
8. Yuwono HS. "A Case of Diabetic Wound: The Coffee Powder Protects the Growth of Cells on the Wound Bed." *American Journal of Medical Case Reports*, vol. 7, no.5(2019): 94-96.
9. Herry Garna, Hendro Sudjono Yuwono, Maya Tejasari. Vulnerable Wound-base Cells Protected by Coffee Powder to Better Healing. *American Journal of Medical Case Reports*, vol. 7, no. 9 (2019): 214-216.

10. Chen K, Lin J, Sun S, Lin J, Kong J, Tian N. Vacuum-assisted closure combined with a closed suction irrigation system for treating postoperative wound infections following posterior spinal internal fixation. 2018; *J Orthop Surg Res* 13, 321:1-8
11. Sen CK, Gordillo GM, Roy S, Kirsner R, Lambert L, Hunt TK, et al. Human Skin Wounds: A Major and Snowballing Threat to Public Health and the Economy. *Wound Repair Regen.* 2009;17(6):763-771.